

What is claimed is:

1 *Sub* 1. An apparatus, comprising:
2 *C7* (a) first and second product support intelligent agents configured to
3 perform product support operations in connection with a computer-related
4 product;
5 (b) a first agent platform configured to execute on a customer
6 computer that utilizes the computer-related product; and
7 (c) a product support program resident on a product support computer
8 used in providing product support for the computer-related product, the
9 product support program including a second agent platform, and the product
10 support program configured to dispatch the first product support intelligent
11 agent to the customer computer for execution by the first agent platform, and
12 to initiate execution of the second product support intelligent agent by the
13 second agent platform.

1 2. The apparatus of claim 1, wherein the first and second product support
2 agents are configured to communicate with one another.

1 3. The apparatus of claim 1, wherein the first product support intelligent agent
2 is configured to execute on either of the first or second agent platforms.

1 4. The apparatus of claim 1, wherein the customer computer is the computer-
2 related product.

1 5. The apparatus of claim 1, wherein the computer related-product comprises
2 at least one of an internal software component, an internal hardware component, an
3 external software component and an external hardware component associated with the
4 customer computer.

1 6. The apparatus of claim 1, wherein each of the first and second product
2 support intelligent agents is configured to perform a product support operation

3 selected from the group consisting of monitoring operational data, collecting
4 operational data, analyzing operational data, identifying an undesirable operational
5 condition in the customer computer, selecting another intelligent agent to remedy the
6 undesirable operational condition, creating another intelligent agent to remedy the
7 undesirable operational condition, performing at least one task to remedy the
8 undesirable operational condition, and combinations thereof.

1 7. The apparatus of claim 1, wherein the first product support intelligent agent
2 is configured to collect operational data associated with the computer-related product,
3 and wherein the second product support intelligent agent is configured to analyze the
4 operational data collected by the first product support intelligent agent to identify an
5 undesirable operational condition for the computer-related product.

1 8. The apparatus of claim 7, wherein the product support program is further
2 configured to dispatch a remedy intelligent agent to remedy the undesirable
3 operational condition.

1 9. The apparatus of claim 8, wherein the product support program is further
2 configured to create the remedy intelligent agent.

1 10. The apparatus of claim 9, wherein the product support program is further
2 configured to publish the remedy intelligent agent with a distribution control that
3 limits distribution of the remedy intelligent agent.

1 11. The apparatus of claim 8, wherein the product support program is further
2 configured to select the remedy intelligent agent from among a plurality of existing
3 remedy agents.

1 12. The apparatus of claim 8, wherein the product support program is
2 configured to dispatch the remedy intelligent agent between product releases of the
3 computer-related product.

1 13. The apparatus of claim 1, wherein the second product support intelligent
2 agent is configured to collect operational data from the customer computer while
3 resident on the product support computer.

1 14. The apparatus of claim 1, wherein the customer computer and the product
2 support computer are coupled to one another over the Internet.

1 15. The apparatus of claim 1, further comprising a cross-customer knowledge
2 base including operational data associated with a plurality of customers, wherein the
3 second product support intelligent agent is configured to analyze the operational data
4 stored in the cross-customer knowledge base to identify an undesirable operational
5 condition in the computer-related product.

1 16. The apparatus of claim 15, wherein the second product support intelligent
2 agent is configured to analyze the operational data using logic selected from the group
3 consisting of neural network logic, fuzzy logic, pattern matching logic, script logic,
4 and combinations thereof.

1 17. The apparatus of claim 1, wherein the first and second product support
2 intelligent agents are associated with different vendors.

1 18. A method of providing product support for a computer-related product,
2 the method comprising:

3 (a) dispatching a first product support intelligent agent from a product
4 support computer to a customer computer to execute on a first agent platform
5 resident on the customer computer to perform a first product support operation
6 associated with the computer-related product; and

7 (b) executing a second product support intelligent agent on a second
8 agent platform resident on the product support computer to perform a second
9 product support operation associated with the computer-related product.

1 19. The method of claim 18, wherein the first and second product support
2 agents are configured to communicate with one another when performing the first and
3 second product support operations.

1 20. The method of claim 18, wherein each of the first and second product
2 support operations are selected from the group consisting of monitoring operational
3 data, collecting operational data, analyzing operational data, identifying an
4 undesirable operational condition in the customer computer, selecting another
5 intelligent agent to remedy the undesirable operational condition, creating another
6 intelligent agent to remedy the undesirable operational condition, performing at least
7 one task to remedy the undesirable operational condition, and combinations thereof.

1 21. The method of claim 18, wherein the first product support intelligent
2 agent is configured to collect operational data associated with the computer-related
3 product, and wherein the second product support intelligent agent is configured to
4 analyze the operational data collected by the first product support intelligent agent to
5 identify an undesirable operational condition for the computer-related product.

1 22. The method of claim 21, further comprising dispatching a remedy
2 intelligent agent to at least one of the customer computer and the product support
3 computer to remedy the undesirable operational condition.

1 23. The method of claim 22, further comprising creating the remedy
2 intelligent agent.

1 24. The method of claim 23, further comprising publishing the remedy
2 intelligent agent with a distribution control that limits distribution of the remedy
3 intelligent agent.

1 25. The method of claim 22, wherein dispatching the remedy intelligent agent
2 occurs between product releases of the computer-related product.

1 26. The method of claim 18, wherein the second product support intelligent
2 agent is configured to collect operational data from the customer computer while
3 resident on the product support computer.

1 27. The method of claim 18, wherein the customer computer and the product
2 support computer are coupled to one another over the Internet.

1 28. The method of claim 18, wherein the second product support intelligent
2 agent is configured to analyze operational data stored in a cross-customer knowledge
3 base to identify an undesirable operational condition in the computer-related product.

1 29. The method of claim 28, wherein the second product support intelligent
2 agent is configured to analyze the operational data using logic selected from the group
3 consisting of neural network logic, fuzzy logic, pattern matching logic, script logic,
4 and combinations thereof.

1 30. The method of claim 18, wherein the first and second product support
2 intelligent agents are associated with different vendors.

1 31. A program product, comprising:

2 (a) first and second product support intelligent agents configured to
3 perform product support operations in connection with a computer-related
4 product;

5 (b) a first agent platform configured to execute on a customer
6 computer that utilizes the computer-related product;

7 (c) a product support program configured to reside on a product
8 support computer used in providing product support for the computer-related
9 product, the product support program including a second agent platform, and
10 the product support program configured to dispatch the first product support
11 intelligent agent to the customer computer for execution by the first agent
12 platform, and to initiate execution of the second product support intelligent
13 agent by the second agent platform; and

14 (d) a signal bearing medium bearing the first and second product
15 support agents, the first agent platform, and the product support program.

1 32. The program product of claim 31, wherein the signal bearing medium
2 includes at least one of a transmission medium and a recordable medium.

1 33. A method of providing product support for a computer-related product,
2 the method comprising:

3 (a) collecting operational data from a plurality of customer computers
4 that utilize the computer-related product during operation of the plurality of
5 customer computers;

6 (b) identifying an undesirable operational condition associated with
7 the computer-related product from the collected operational data;

8 (c) creating a product support intelligent agent configured to remedy
9 the undesirable operational condition; and

10 (d) distributing the product support intelligent agent to at least first
11 and second customer computers from the plurality of customer computers to
12 remedy the undesirable operational condition in the first and second customer
13 computers.

1 34. The method of claim 33, wherein collecting the operational data is
2 performed by at least one intelligent agent.

1 35. The method of claim 34, wherein the intelligent agent that collects the
2 operational data is resident on a customer computer.

1 36. The method of claim 34, wherein the intelligent agent that collects the
2 operational data is resident on a product support computer.

1 37. The method of claim 33, wherein identifying the undesirable operational
2 condition is performed by at least one intelligent agent that analyzes the collected
3 operational data.

1 38. The method of claim 37, wherein identifying the undesirable operational
2 condition includes performing pattern matching on the collected operational data to
3 identify a recurring pattern in the collected operational data.

1 39. The method of claim 37, wherein the intelligent agent that analyzes the
2 collected operational data includes analysis logic selected from the group consisting of
3 neural network logic, fuzzy logic, pattern matching logic, script logic, and
4 combinations thereof.

1 40. The method of claim 33, wherein distributing the product support
2 intelligent agent includes distributing the product support intelligent agent to the first
3 customer computer prior to distributing the product support intelligent agent to the
4 second customer computer, the method further comprising testing the product support
5 intelligent agent prior to distributing the product support intelligent agent to the
6 second customer computer.

1 41. The method of claim 33, wherein distributing the product support
2 intelligent agent includes publishing the product support intelligent agent with a
3 distribution control that limits distribution of the remedy intelligent agent.

1 42. The method of claim 33, wherein collecting the operational data,
2 identifying the undesirable operational condition, creating the product support
3 intelligent agent and distributing the product support intelligent agent are performed
4 between product releases of the computer-related product.

1 43. The method of claim 33, wherein creating the product support intelligent
2 agent is performed by another intelligent agent.

1 44. An apparatus, comprising:
2 (a) at least one memory;
3 (b) program code resident in the memory and configured to identify an
4 undesirable operational condition associated with a computer-related product
5 from operational data collected from a plurality of customer computers that
6 utilize the computer-related product, create a product support intelligent agent
7 configured to remedy the undesirable operational condition, and distribute the
8 product support intelligent agent to at least first and second customer
9 computers from the plurality of customer computers to remedy the undesirable
10 operational condition in the first and second customer computers.

1 45. The apparatus of claim 44, wherein the program code is further configured
2 to collect the operational data.

1 46. The apparatus of claim 45, wherein the program code that collects the
2 operational data is disposed in at least one intelligent agent.

1 47. The apparatus of claim 44, further comprising a cross-customer
2 knowledge base configured to store the collected operational data.

1 48. The apparatus of claim 44, wherein the program code that identifies the
2 undesirable operational condition is disposed in at least one intelligent agent that
3 analyzes the collected operational data.

1 49. The apparatus of claim 48, wherein the program code that identifies the
2 undesirable operational condition is configured to perform pattern matching on the
3 collected operational data to identify a recurring pattern in the collected operational
4 data.

1 50. The apparatus of claim 49, wherein the intelligent agent that analyzes the
2 collected operational data includes analysis logic selected from the group consisting of

3 neural network logic, fuzzy logic, pattern matching logic, script logic, and
4 combinations thereof.

1 51. The apparatus of claim 44, wherein the program code that distributes the
2 product support intelligent agent is configured to distribute the product support
3 intelligent agent to the first customer computer prior to distributing the product
4 support intelligent agent to the second customer computer.

1 52. The apparatus of claim 44, wherein the program code is further configured
2 to publish the product support intelligent agent with a distribution control that limits
3 distribution of the remedy intelligent agent.

1 53. The apparatus of claim 44, wherein the program code is configured to
2 identify the undesirable operational condition, create the product support intelligent
3 agent and distribute the product support intelligent agent between product releases of
4 the computer-related product.

1 54. The apparatus of claim 44, wherein the program code that creates the
2 product support intelligent agent is resident in another intelligent agent.

1 55. The apparatus of claim 44, wherein the program code that creates the
2 product support intelligent agent is resident in an agent builder program that creates
3 the product support intelligent agent in response to user input.

1 56. A program product, comprising:

2 (a) program code configured to identify an undesirable operational
3 condition associated with a computer-related product from operational data
4 collected from a plurality of customer computers that utilize the computer-
5 related product, create a product support intelligent agent configured to
6 remedy the undesirable operational condition, and distribute the product
7 support intelligent agent to at least first and second customer computers from
8 the plurality of customer computers to remedy the undesirable operational
9 condition in the first and second customer computers; and

10 (b) a signal bearing medium bearing the program code.

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1 57. A method of providing product support for a computer-related product,
2 the method comprising:

3 (a) collecting operational data from a plurality of customer computers
4 that utilize the computer-related product during operation of the plurality of
5 customer computers;

6 (b) analyzing the operational data from the plurality of customer
7 computers using at least one intelligent agent; and

8 (c) identifying as a result of the analysis an undesirable operational
9 condition associated with the computer-related product in at least one of the
10 customer computers.

1 58. The method of claim 57, wherein analyzing the operational data comprises
2 performing pattern matching in the operational data using the intelligent agent, and
3 wherein identifying the undesirable operational condition comprises identifying a
4 recurring pattern in the operational data that is indicative of the undesirable
5 operational condition.

1 59. The method of claim 57, wherein analyzing the operational data is
2 performed using analysis logic selected from the group consisting of neural network
3 logic, fuzzy logic, pattern matching logic, script logic, and combinations thereof.

1 60. The method of claim 57, wherein collecting the operational data is
2 performed by at least one intelligent agent.

1 61. The method of claim 60, wherein the intelligent agent that collects the
2 operational data is resident on a customer computer.

1 62. The method of claim 60, wherein the intelligent agent that collects the
2 operational data is resident on a product support computer.

1 63. The method of claim 57, wherein identifying the undesirable operational
2 condition includes identifying the undesirable operational condition in the computer-
3 related product for a specific customer computer.

1 64. The method of claim 57, wherein identifying the undesirable operational
2 condition includes identifying an undesirable operational condition that is common to
3 the plurality of customer computers.

1 65. The method of claim 57, wherein identifying the undesirable operational
2 condition is performed by at least one intelligent agent.

1 66. The method of claim 57, further comprising dispatching a remedy
2 intelligent agent to at least one of the plurality of customer computers to remedy the
3 undesirable operational condition.

1 67. An apparatus, comprising:

2 (a) a memory;

3 (b) an intelligent agent resident in the memory and configured to
4 analyze operational data from a plurality of customer computers that utilize a
5 computer-related product during operation of the plurality of customer
6 computers; and

7 (c) program code configured to identify as a result of the analysis an
8 undesirable operational condition associated with the computer-related product
9 in at least one of the customer computers.

1 68. The apparatus of claim 67, wherein the intelligent agent is configured to
2 analyze the operational data by performing pattern matching in the operational data
3 using the intelligent agent, and wherein the program code is configured to identify the
4 undesirable operational condition by identifying a recurring pattern in the operational
5 data that is indicative of the undesirable operational condition.

1 69. The apparatus of claim 67, wherein the intelligent agent utilizes analysis
2 logic selected from the group consisting of neural network logic, fuzzy logic, pattern
3 matching logic, script logic, and combinations thereof.

1 70. The apparatus of claim 67, wherein the program code is resident in the
2 intelligent agent.

1 71. The apparatus of claim 67, wherein the program code is resident in a
2 second intelligent agent.

1 72. The apparatus of claim 67, further comprising a second intelligent agent
2 configured to collect at least a portion of the operational data, wherein the second
3 intelligent agent is configured to reside on at least one of a customer computer and a
4 product support computer.

1 73. The apparatus of claim 67, wherein the program code is further configured
2 to dispatch a remedy intelligent agent to at least one of the plurality of customer
3 computers to remedy the undesirable operational condition.

1 74. The apparatus of claim 73, wherein the program code is further configured
2 to create the remedy intelligent agent.

1 75. A program product, comprising:

2 (a) an intelligent agent configured to analyze operational data from a
3 plurality of customer computers that utilize a computer-related product during
4 operation of the plurality of customer computers;

5 (b) program code configured to identify as a result of the analysis an
6 undesirable operational condition associated with the computer-related product
7 in at least one of the customer computers; and

8 (c) a signal bearing medium bearing the intelligent agent and program
9 code.

1 76. An apparatus, comprising:

2 (a) a memory within which is resident a plurality of intelligent agents
3 and distribution control information associated with each intelligent agent that
4 defines distribution rights for such intelligent agent; and

5 (b) program code configured to control distribution of an intelligent
6 agent in response to a request to access such intelligent agent based upon the
7 distribution control information associated with such intelligent agent.

1 77. The apparatus of claim 76, wherein the program code is further configured
2 to set distribution control information for an intelligent agent in connection with
3 publishing the intelligent agent.

1 78. The apparatus of claim 77, wherein the distribution control information is
2 disposed in a header for each intelligent agent.

1 79. The apparatus of claim 76, wherein the distribution control information
2 defines a publishing level that prohibits distribution of an intelligent agent to another
3 computer.

1 80. The apparatus of claim 76, wherein the distribution control information
2 defines a publishing level that permits distribution of an intelligent agent to another
3 computer only in response to authorization from product support personnel.

1 81. The apparatus of claim 76, wherein the plurality of intelligent agents are
2 each configured to perform product support operations in connection with supporting
3 a computer-related product, and wherein the distribution control information identifies
4 a first intelligent agent as an internal agent configured to execute on a product support
5 computer, and a second intelligent agent as an external agent configured to execute on
6 a customer computer configured to utilize the computer-related product.

- 1 82. The apparatus of claim 81, wherein the distribution control information
- 2 further identifies a third intelligent agent as a base agent associated with a particular
- 3 release of the computer-related product.

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1 83. A method of controlling distribution of an intelligent agent, the method
2 comprising:

3 (a) maintaining in a memory distribution control information that
4 defines distribution rights to each of a plurality of intelligent agents; and

5 (b) controlling distribution of an intelligent agent among the plurality
6 of intelligent agents in response to a request to access such intelligent agent
7 based upon the distribution control information associated with such
8 intelligent agent.

1 84. The method of claim 83, further comprising setting distribution control
2 information for an intelligent agent in connection with publishing the intelligent agent.

1 85. The method of claim 84, wherein the distribution control information is
2 disposed in a header for each intelligent agent.

1 86. The method of claim 83, wherein the distribution control information
2 defines a publishing level that prohibits distribution of an intelligent agent to another
3 computer.

1 87. The apparatus of claim 83, wherein the distribution control information
2 defines a publishing level that permits distribution of an intelligent agent to another
3 computer only in response to authorization from product support personnel.

1 88. The method of claim 83, wherein the plurality of intelligent agents are
2 each configured to perform product support operations in connection with supporting
3 a computer-related product, and wherein the distribution control information identifies
4 a first intelligent agent as an internal agent configured to execute on a product support
5 computer, and a second intelligent agent as an external agent configured to execute on
6 a customer computer configured to utilize the computer-related product.

- 1 89. The method of claim 88, wherein the distribution control information
- 2 further identifies a third intelligent agent as a base agent associated with a particular
- 3 release of the computer-related product.

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1 90. A program product, comprising:

2 (a) an intelligent agent;

3 (b) a header associated with the intelligent agent, the header including
4 distribution control information that defines distribution rights to the
5 intelligent agent; and

6 (c) a signal bearing medium bearing the header and the intelligent
7 agent.

1 91. The program product of claim 90, wherein the header is defined in a
2 markup language.

1 92. The program product of claim 91, wherein the header is defined in XML.

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1 93. A method of providing product support for a computer-related product,
2 the method comprising:

3 (a) executing a first intelligent agent to perform a first task associated
4 with remedying an undesirable operational condition associated with a
5 customer computer that utilizes the computer-related product, wherein the first
6 intelligent agent is provided by a first vendor that supplies a first component
7 associated with the computer-related product; and

8 (b) executing a second intelligent agent to perform a second task
9 associated with remedying the undesirable operational condition, wherein the
10 second intelligent agent is provided by a second vendor that supplies a second
11 component associated with the computer-related product.

1 94. The method of claim 93, wherein the first component comprises the
2 customer computer, and wherein the second component comprises a hardware or
3 software component installed within or coupled to the customer computer.

1 95. The method of claim 93, wherein the first intelligent agent is configured to
2 communicate with the second intelligent agent.

1 96. The method of claim 93, wherein the first intelligent agent is configured to
2 control the second intelligent agent.

1 97. The method of claim 93, wherein the first and second tasks are each
2 selected from the group consisting of monitoring operational data, collecting
3 operational data, analyzing operational data, identifying an undesirable operational
4 condition in the customer computer, selecting another intelligent agent to remedy the
5 undesirable operational condition, creating another intelligent agent to remedy the
6 undesirable operational condition, modifying a configuration setting, installing
7 program code on a customer computer, performing at least one operation that assists
8 in remedying the undesirable operational condition, and combinations thereof.

1 98. An apparatus, comprising:

2 (a) at least one memory;

3 (b) a first intelligent agent resident in the memory and configured to
4 perform a first task associated with remedying an undesirable operational
5 condition associated with a customer computer that utilizes the computer-
6 related product, wherein the first intelligent agent is provided by a first vendor
7 that supplies a first component associated with the computer-related product;
8 and

9 (b) a second intelligent agent resident in the memory and configured to
10 perform a second task associated with remedying the undesirable operational
11 condition, wherein the second intelligent agent is provided by a second vendor
12 that supplies a second component associated with the computer-related
13 product.

1 99. The apparatus of claim 98, wherein the first component comprises the
2 customer computer, and wherein the second component comprises a hardware or
3 software component installed within or coupled to the customer computer.

1 100. The apparatus of claim 98, wherein the first intelligent agent is
2 configured to communicate with the second intelligent agent.

1 101. The apparatus of claim 98, wherein the first intelligent agent is
2 configured to control the second intelligent agent.

1 102. The apparatus of claim 98, wherein the first and second tasks are each
2 selected from the group consisting of monitoring operational data, collecting
3 operational data, analyzing operational data, identifying an undesirable operational
4 condition in the customer computer, selecting another intelligent agent to remedy the
5 undesirable operational condition, creating another intelligent agent to remedy the
6 undesirable operational condition, modifying a configuration setting, installing

7 program code on a customer computer, performing at least one operation that assists
8 in remedying the undesirable operational condition, and combinations thereof.

1 103. The apparatus of claim 98, further comprising program code configured
2 to dispatch the first and second intelligent agents to the customer computer to remedy
3 the undesirable operational condition.

1 104. A program product, comprising:

2 (a) a first intelligent agent configured to perform a first task associated
3 with remedying an undesirable operational condition associated with a
4 customer computer that utilizes the computer-related product, wherein the first
5 intelligent agent is provided by a first vendor that supplies a first component
6 associated with the computer-related product;

7 (b) a second intelligent agent configured to perform a second task
8 associated with remedying the undesirable operational condition, wherein the
9 second intelligent agent is provided by a second vendor that supplies a second
10 component associated with the computer-related product; and

11 (c) a signal bearing medium bearing the first and second intelligent
12 agents.